3. WEAVER EXPERT REPORT.

Expert Report of
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As requested by
Wallace & Graham, P.A.

Regarding
Taylor v. McGill Environmental Systems of NC, Inc.

Understanding of Facts

1. On February 18th, 2012, the Plaintiff's husband, Mr. Brandon Taylor, was performing his job as a wastewater management employee at the Smithfield Packing Plant in Clinton, North Carolina. ***(Ex. 1 -- Complaint, p. 1).*** Mr. Taylor was transferring hog waste sludge containing decayed and fermented pig parts, urine, feces, fat, grease, and hair from a storage tank to a tanker truck so that it could be shipped off-site. ***(Ex. 1 -- Complaint, p. 2; Ex. 5 -- Norman Johnson statement dated 2/18/12 (bates Smithfield_McGill-002922)).*** Mr. Taylor was killed after breathing in and being overcome by hog waste gases including hydrogen sulfide gas. ***(Ex. 1 -- Complaint, p.1; Ex. 2 -- autopsy report).***

2. The driver of the truck, Ricky Robinson, who was an employee of McGill Environmental Systems of N.C. Inc., found Mr. Taylor motionless and slumped over with his head in the tanker's hatch opening with the sludge still running. ***(Ex. 1 -- Complaint, p. 2; Ex. 6 -- witness statements at bates no. B. Taylor 1207-09).*** The coroner and OSHA investigators found that the official cause of death was inhalation of hydrogen sulfide gas. ***(Ex. 1 -- Complaint, p.2; Ex. 2 -- autopsy report).***

3. Mr. Taylor was an employee at the Smithfield packing plant. At the time of his death, he was engaged in the act of draining wastewater sludge from an overhead Smithfield storage tank down into a McGill tanker truck which required him to be stationed on top of the tanker truck. ***(Ex. 1 -- Complaint p. 2).*** The bill of lading for the load in question reflects that the McGill tanker involved was tanker number 663. ***(Ex. 7 -- McGill bill of lading).***

4. A statement dated Feb. 18, 2012 by Smithfield employee Norman Johnson regarding Mr. Taylor's death described the waste as "DAF float with fats, oils and grease of animal origin" and that as to the gases present, there was "Hydrogen Sulfide." ***(Ex. 5 -- Norman Johnson statement).*** (Dissolved air flotation (DAF) is a water treatment process that clarifies wastewater by the removal of suspended matter such as oil or solids).

5. Lewis Jackson, McGill trucking manager, confirmed that McGill had knowledge that the sludge could produce hydrogen sulfide. ***(Ex. 8 -- Jackson 10/20/14 depo. pp. 358-60).*** When OSHA investigated Mr. Taylor's death, McGill admitted it knew of hydrogen sulfide dangers. ***(Ex. 4 -- OSHA McGill file, at bates no. 3403).***

6. The evidence indicates McGill management knew of hydrogen sulfide years before the death. Craig Coker, the chief engineer at McGill as of 2004, wrote an internet inquiry in 2004 regarding hydrogen sulfide emissions from biosolids composting. ***(Ex. 9 -- Craig Coker 3/6/04 internet posting).***

7. After the death, McGill trucking manager Mr. Jackson sent an email describing how the death occurred and said Mr. Taylor was "overcome by the fumes from the product being loaded onto the tanker or coming from inside the tanker." ***(Ex. 10 -- Lewis Jackson email dated 2/18/12).***

8. The overhead storage tank that Mr. Taylor was draining had a pipe that would attach to its bottom. The McGill tanker had no seal or connector to connect the pipe to the tanker without there

being an open gap. Instead, the pipe coming down from the overhead storage tank simply hung over and into the open hatch of the McGill tanker. The diameter of the pipe from the overhead storage tank was approximately 8 inches and the hatch diameter (opening) was about 20 inches so there was an open area when the pipe from the overhead tank was inserted into the tanker hatch opening. ***(Ex. 11 -- photos; Ex. 2 -- description in autopsy report).*** This meant that when the worker turned the circular valve handle under the overhead tank to start the sludge flow, there was space for gas to be expelled from the opening into the worker's face.

9. The NC OSHA investigation of the death found that as waste sludge was drained down from out of the overhead tank into the McGill tanker, the rising sludge in the tanker pushed hydrogen sulfide gas back up out of the tanker's open hatch. The OSHA file described: "As the sludge fills the tanker, hydrogen sulfide gas from the sludge is displaced up out of the tanker into the breathing zone of the wastewater operators." Mr. Taylor was a wastewater operator. ***(Ex. 12 -- OSHA file materials, at bates no. B. Taylor 1134).***

10. Hydrogen sulfide gas is heavier than air. ***(Ex. 13 -- H2S MSDS).*** This means that it could sit on top of the sludge filling the tanker and be pushed up out of the tanker hatch by the sludge as the sludge level rose.

11. The OSHA findings describe: "On February 18, 2012, on or about 12:35 a.m., Brandon Taylor, deceased, was loading sludge from one of the four 5,600 gallon, overhead storage tanks into a semi-tanker trailer. While loading the semi-tanker trailer he inhaled hydrogen sulfide gas being displaced out of the tanker from sludge loaded from the overhead storage tank. This resulted in asphyxiation and death." ***(Ex. 12 -- OSHA file materials, at bates no. B. Taylor 1134).***

12. An OSHA "Worksheet" dated July 19, 2012 described how after the fatality, days after the event, a probe measured high levels of hydrogen sulfide gas which took people's breath away, made them "gag" and were "undescribable." ***(Ex. 4 -- OSHA file materials, at bates no. B. Taylor 3403).***

13. Dr. Barr's autopsy report for Mr. Taylor described: "According to the tanker driver of the vehicle being filled, he'd initially noted the decedent wearing his hard hat and appropriate suspension harness, performing his job on the 'cat walk' atop the tanker... Subsequently, viewing the decedent thru a side mirror, he observed what he terms 'something unusual', namely the man had apparently removed his hard hat and was 'holding his head.' His harness was also absent." Dr. Barr further noted: "The waste water treatment operator's job involves alignment of the down tube and the 20 inch diameter port, and subsequent monitoring of the filling process. When aligned, a valve controls fluid flow, which on initiation is reputedly accompanied by a blast of escaping gases in the initial effluent." ***(Ex. 2 -- Autopsy report, p. 7 of 8 typed pages).***

14. In a handwritten note on the last page of the autopsy report, it indicates that Dr. Barr had spoken to "the truck driver at the loading area" and learned that "There have been reports of blast of gas when worker opens valve to start the process" and "one recently was overcome." ***(Ex. 2 -- Autopsy report, very last page, bottom of the page, handwriting).***

15. Mr. Taylor had been working for the Smithfield Packing Plant since December 2010, i.e. for 13 months at the time of his death. ***(Ex. 14 – New Hire form, bates no. Smithfield_McGill-119).***

16. From December 12th, 2011 to the day of the accident on February 18th, 2012, the process of pumping the sludge from an overhead tank to the tanker truck was a continuous process with the day shift loading semi-tanker trailers 4-6 times per day and the night shift loading 1-2 tankers per night. ***(Ex. 12 -- OSHA Safety and Health Narrative, bates no. B. Taylor 1134).***

17. The loading of semi-tanker trailers with sludge was not a routine process during normal production. Normally, a mechanized belt press was used to process the waste and it would remove some of the liquid creating a moist solid that was loaded onto an open bed tractor trailer that was then transported by McGill. However, in the weeks leading up to the death, the belt press was out of service or experiencing breakdowns which forced the companies to use the back-up system relying on the overhead tanks and the tankers. ***(Ex. 12 -- OSHA Safety and Health Narrative, bates no. B. Taylor 1134).***

18. With regard to the belt press system breakdowns, a log book reflects that there were problems with the belt press: see entries for 10/10/11 ("sludge wasn't looking right... motor was bad"); 10/17/11 (belt press sludge mixer stopped working, has bad motor); 10/22/11 (sludge pump stopped working); 10/26/11 (no hot water for belt press); 12/12/11 (belt press stopped working, went to overhead tanks, they got full); 12/26/11 (sludge still won't press on belt press); 12/30/11 (belt press stopped working, had to go to overhead tank). ***(Ex. 3 -- Log book excerpts).***

19. A belt press rolls and presses the waste, exposing it to the air as well, and removes some of the liquid. The belt press system at Smithfield would have allowed the sludge to be exposed to air. ***(Ex. 15 -- Sean Fallon deposition 10/21/14, pp. 88-90).***

20. McGill used open top trailers to pick up the sludge that had been adequately de-watered through the belt press. The McGill open top trailers allowed the sludge to be open to the air via an open top with a tarp that rolls down. ***(Ex. 8 -- Lewis Jackson depo. 10/20/14, p. 335; Ex. 15 -- Sean Fallon depo. 10/21/14, p. 90; Ex. 11 -- photo of McGill trailer).***

21. By contrast, the overhead storage tanks encased the waste in metal. Likewise, the McGill tankers were closed containers. ***(See Ex. 11 -- photos of overhead storage tanks at Smithfield and of McGill tanker).***

22. The waste sludge that came out of the overhead tanks and was in McGill's tankers was thus in an air-deficient or "anaerobic" environment.

23. The use of a belt press and then transportation by open-top trailers to handle the waste is safer than the overhead tank/tanker system since there are no closed containers in which poison gases can accumulate and then be expelled through an open tanker hatch.

24. After the death of Mr. Taylor, McGill never again sent tankers to the Smithfield Clinton plant to load from the overhead storage tanks. ***(Ex. 8 -- Jackson 10/20/14 depo., pp. 323-24, 365; Ex. 15 -- Fallon depo. 10/21/14 p. 42).*** Instead McGill only sent open top trailers. ***(Ex. 15 -- Fallon depo. 10/21/14 p. 42).*** Since the death of Mr. Taylor, all of the overhead storage tanks at the Smithfield plant have been torn down. ***(Ex. 19 -- Boykin Affidavit).***

25. As of the date of the death, McGill had an arrangement with Smithfield Packing Company under which McGill sent tanker-trailers to the Smithfield hog processing plants, including the Clinton NC plant, to pick up loads of wastewater sludge containing hydrogen sulfide and other toxic substances and gases. ***(Ex. 1 -- Complaint p.1-2).***

26. According to Lewis Jackson, transportation manager for McGill, he himself was not qualified to drive tankers; and McGill used tankers over 30 years old. ***(Ex. 16 -- Jackson 8/11/14 depo. pp. 35, 38).*** Brandon Taylor, born in 1985, was younger than the tankers he loaded waste into.

27. McGill and Smithfield had worked together for over ten years at other plants. It is believed McGill first began services at the Clinton plant in 2007 as that was the year that Smithfield took over the plant in buying Premium Standard Foods. ***(Ex. 17 -- Premium Standard Wikipedia entry).***

28. I have not been provided with any documents to show that the system of holding waste in closed overhead storage tanks and then draining them into McGill tankers with hatches on top was ever used by McGill and Smithfield at any other facility.

29. I am not aware of any assessment or testing that McGill did to make sure the overhead tank/tanker system was safe to employ and would not lead to hydrogen sulfide exposure issues.

30. Anthony Teachey, the McGill plant manager, testified that he knew that hydrogen sulfide could be generated from sludge kept in closed containers. He knew that "whenever I have that biosolids and stuff like that just sitting in an enclosed container, obviously, it's sitting there building up, and those gases can generate from sitting around in a container for long periods of time and they'll start to build up." He described "biosolids" as the "sludge ... coming from our customers." He agreed that if sludge sits around too long "in an enclosed environment" then H2S can be produced. He gave as an example of an "enclosed environment," the "inside of a container or tanker, something that's enclosed where it's not open air, it sits there and it just -- it builds up." Mr. Teachey said that the material they received from Smithfield was biosolids, aka sludge. Mr. Teachey testified that there was an odor when they dumped the raw sludge the truck brought in. He said it "stinks." ***(Ex. 18 -- Teachey deposition).***

31. Ulysses Boykin was a wastewater operator who worked with Mr. Taylor at the Smithfield Clinton facility. Mr. Boykin remembered Mr. Taylor as a safe and trustworthy coworker. ***(Ex. 19 -- Boykin Affidavit, item no. 4).***

32. Mr. Boykin stated that the wastewater operator would drain waste from the overhead storage tanks. There were four storage tanks, located at the side of the wastewater department. McGill was the only company that provided tankers at Smithfield to take waste away from the overhead tanks at night. All of the tanks were used to store waste but tank 4 was used less often than the others. Since the death of Mr. Taylor, the tanks have been torn down. ***(Ex. 19 -- Boykin Affidavit, item no. 3).***

33. The 4 overhead storage tanks each held 5600 gallons. Over time, heavier solids in the sludge would settle to the bottom. Per the OSHA report, the "sludge had been thicker than usual" over the two weeks before the death. ***(Ex. 12 -- OSHA Investigative report, bates no. B. Taylor 1134).***

34. Tim Artis was a coworker of Mr. Taylor. Mr. Artis stated that McGill was the only company he knew of that agreed to provide tankers at the Clinton site to load waste at night from the overhead tanks. ***(Ex. 20 -- Artis Affidavit, item no. 3).***

35. Mr. Boykin, one of Mr. Taylor's coworkers, noted that the only way the wastewater operators could load the McGill tanker was to climb up on top. The ladder attached to the tanker was on the passenger side. Once the hatch was opened, the operator stood over it to make sure that he did not overload the tanker. There was no gauge or porthole or other indicator on the tanker that would alert how full it was. The operator had to physically stand over the hatch so as not to overload it using a flashlight to try to see how full it was since the McGill tanker had no gauging equipment and McGill was picking up loads at night. ***(Ex. 19 -- Boykin Affidavit, item no. 7).***

36. Lewis Jackson, trucking manager for McGill, confirmed that McGill tankers had their ladder on the passenger side, not the driver's side. ***(Ex. 8 -- Jackson 10/20/14 depo. p. 327).***

37. Mr. Boykin stated that the lighting was poor when loading at night. He noted that it was especially hard to see how full the tanker was getting at night but McGill would still send tankers there at night anyway. ***(Ex. 19 -- Boykin Affidavit, item no. 8).***

38. Mr. Boykin stated that during times when Ricky Robinson was the McGill driver, at times Ricky would climb up on the tanker himself to check that Mr. Boykin had properly closed the hatch. Thus the McGill driver would at times actively get involved with the loading in terms of getting up on the tanker. ***(Ex. 19 -- Boykin Affidavit, item no. 11).***

39. Mr. Artis described that sometimes, before they loaded waste, the McGill driver Ricky would open the hatch, and other times he did not. However, the driver was apparently never trained by McGill to climb up top to "spot" the worker throughout the process to load the waste, as Ricky never did so. ***(Ex. 20 -- Artis Affidavit, items no. 9-10).***

40. The NC OSHA inspections of Smithfield and McGill after the death (OSHA Inspection numbers #314371691 and #313828857) reveal that similar accidents occurred at the Smithfield packing plant at Clinton involving McGill tanker-trailers and hydrogen sulfide gas before the death. ***(Exs. 4, 12 -- OSHA records).***

41. On February 20th, 2010, Smithfield employee Tim Artis was overcome by the gases while loading sludge from the overhead storage tanks into a semi-tanker trailer and fell off the tanker-trailer. The fall resulted in serious back and other injuries and lost work time. Tim Artis told Ricky Robinson of McGill what had occurred; Mr. Robinson was the driver at the scene. Mr. Artis provided a written statement that "[w]hen I opened the valve to the overhead tank a lot of fumes came out and I could not breathe ... I turned my back to try and catch my breath and passed out." ***(Exs. 4, 12 -- OSHA records; Ex. 20 -- Tim Artis Affidavit, items no. 4-6, 11; Ex. 21 -- Smithfield personal injury investigation report (bates Smithfield_McGill-3438 to 3440) & Ricky Robinson handwritten statement (bates Smithfield_McGill-3441)).***

42. Tim Artis in a more recent affidavit recalls that on February 20, 2010, at night, when he climbed on top of the McGill tanker, gases escaped from the hatch and he could not breathe. The McGill driver Ricky was standing outside and was watching. When the gas came out of the hatch, Tim went to the front of the tanker to try to catch his breath, then he climbed down the ladder and told Ricky that the fumes were too strong. He told Ricky he was going to shut the valve off and was not going to load further. Tim climbed back up on the tanker and went near the hatch where the fumes were coming out, to try to shut off the draining line, and he lost consciousness. ***(Ex. 20 -- Artis Affidavit, item no. 5).***

43. Mr. Artis described that they were draining from an overhead tank at Smithfield. Because the McGill ladder was located on the passenger side, the worker could not just stand on the ladder to do the draining, which would keep him further away from the escaping gases. Instead he had to climb all the way up on top of the tanker where it was cramped because the overhead storage tanks hung down from above. Tim recalled that the McGill tankers were old and had a big hatch on top. When they opened the hatch, it was about two feet across and had no airtight seal. ***(Ex. 20 -- Artis Affidavit, item no. 7).***

44. Mr. Artis described that after his fall, he was taken to the hospital where he was found to have broken bones and serious back, neck and other injuries. He was out of work for a significant period of time. Despite this incident where Mr. Artis was seriously hurt, McGill still kept sending over tankers, did not put warning signs on the tankers, did not install new equipment and did not take other safety measures. ***(Ex. 20 – Artis Affidavit, item no. 11).***

45. A written statement by Norman Johnson of Smithfield dated Feb. 20, 2010 described that Mr. Artis "was loading a sludge tanker with sludge and fell off the ladder when he became overcome by the odor of the sludge." ***(Ex. 21 -- bates Smithfield_McGill-3439).***

46. A written statement by the McGill driver, Ricky Robinson, dated Feb. 20, 2010 described that when Tim Artis fell and was injured, that he (Ricky), "alerted my manager (Lewis Jackson) of the situation." ***(Ex. 22 -- Ricky Robinson statement dated 2/20/10, Dep. ex. 55, pg. 3).*** Thus at least two McGill employees, including a manager (Ricky, the driver, and Lewis, the manager), knew of the serious injury. Yet there is no evidence of any investigation of the accident by McGill afterward or any assessment by McGill of the dangers of the tank-to-tanker system.

47. In January 2012, only weeks before Mr. Taylor's death, another Smithfield employee, Ulysses Boykin, contracted a bacterial eye infection (conjunctivitis), stating that it was from the hydrogen sulfide gas. Mr. Boykin told Ricky Robinson of McGill what had occurred and Mr. Robinson was at the scene for the January 19, 2012 incident. Mr. Boykin also recalls a second, January 24 injury incident. ***(Ex. 12 – OSHA records, bates no. B. Taylor 1135; Ex. 19 – Ulysses Boykin Affidavit and exhibit to the affidavit consisting of Smithfield personal injury investigation report (bates Smithfield_McGill-3446 to 3449)).***

48. Specific to the January 19th incident, Mr. Boykin recalls that he was draining waste from one of the overhead storage tanks into a tanker driven by Ricky Robinson for McGill. When Mr. Boykin started releasing the sludge, the gases came up from the open tanker hatch into his face. He couldn't breathe and the gases got in his eyes. Since the gases came out so strong and fast, he was

concerned that McGill may not have cleaned out the tanker properly before it got to Smithfield. ***(Ex. 19 -- Boykin Affidavit, item no. 6).***

49. An injury report dated Jan. 20, 2012 described that Mr. Boykin "states he was releasing the sludge into the tanker and fumes came up from the tanker .... Employee states he was exposed to fumes from tanker." ***(Ex. 19 -- Smithfield personal injury investigation report, bates Smithfield_McGill-3446).*** Another record states, "fumes came up from the tanker." ***(Ex. 19 -- bates Smithfield_McGill-3448).***

50. Also, Mr. Boykin recalled an incident on January 24 when gases came out of a McGill tanker into his face when he was loading it. The gases were strong coming out from the tanker and its open hatch and he was concerned the tanker inside was not being kept clean. ***(Ex. 19 -- Boykin Affidavit, item no. 6).*** In this regard, after Mr. Taylor's death, McGill trucking manager Lewis Jackson in an email said that McGill did not have enough water pressure or volume to do proper tanker washouts. ***(Ex. 23 -- Email dated 3/1/12, bates. No. MCG16666).***

51. According to the records, a 160 ppm reading for H2S was taken on January 24, 2012. The testing documented 160 ppm of H2S at the entry of the tanker hatch and reflected that employees could be exposed to hydrogen sulfide gas above the immediately dangerous to life or health (IDLH) threshold of 100 ppm. ***(Ex. 12 -- OSHA records, bates no. B. Taylor 1135, 1149).***

52. After the Artis and Boykin incidents, McGill continued hauling waste at night by tanker. It was not until Mr. Taylor's death that they stopped picking up Smithfield's waste water sludge by tanker from the overhead tanks. ***(Ex. 8 -- Lewis Jackson 10/20/14 depo., pp. 323-24, 365; Ex. 15 -- Fallon 10/21/14 depo. p. 42).***

53. I am advised that EMA was a competitor of McGill. Reviewing photos of an EMA tanker, it appears that EMA tankers had their attached ladder on the driver's side not the passenger side like McGill tanker 663. Further, EMA tankers had equipment to help tell how full the tanker was getting inside. This included a threaded rod mounted vertically inside the hatch opening with 4 washers spaced apart that could be used to judge the fill level. ***(Ex. 24 -- EMA tanker photos).***

54. The CSHO/Department of Labor investigated McGill, and found that McGill:

- was "aware of the potential generation of dangerous gases such as methane and hydrogen sulfide gas from organic material;"
- knew that if the "environment becomes anaerobic then gases can be generated;"
- had its own drivers open the hatch at the McGill facility to drain the waste there and knew this would generate "gas" that "smelled like rotten eggs to the 20th time;"
- failed to evaluate the respiratory hazard to its own workers draining the waste;
- failed to label the tankers as permit confined spaces, when the "hazard exists in that an employee could unknowingly enter a confined space which could result in engulfment or asphyxiation from toxic gas such as hydrogen sulfide resulting in death;" and
- "truck drivers of McGill ... were being exposed to the same hazards off-loading the wastewater sludge ... as were the wastewater operators at Smithfield...."

(Ex. 4 -- OSHA McGill report file for inspection no. 316362037).

55. After the death of Mr. Taylor, McGill added a confined space warning on the side of its tankers. ***(Ex. 25 – Steve Cockman 10/20/14 depo., pp. 372-75).*** This occurred after OSHA found that McGill had "two semi-tanker trailers with physical and chemical hazards that were not evaluated as permit confined spaces." ***(Ex. 4 -- OSHA McGill report file for inspection no. 316362037, bates no. B. Taylor 3409).***

56. According to McGill witness Lewis Jackson, transportation manager for McGill, after the death McGill added a confined space warning on all its tankers; it was added near the externally-mounted tank ladder so people could see it. ***(Ex. 16 -- Jackson 8/11/14 depo. pp. 39-44).*** Photos reflect that McGill put a confined space warning label on the tankers after the death. ***(Ex. 4 – OSHA records, bates no. B. Taylor 3347-48).***

57. Smithfield employee Mr. Boykin, who worked with Mr. Taylor, states that before the death there was not a confined space label on the tanker. If there had been, Mr. Boykin would have known that there was a problem being up on that tanker and that a confined space permit would have been necessary and he would have talked to the safety department for information. ***(Ex. 19 -- Boykin Affidavit item nos. 14, 21-22).***

58. McGill training materials include an example of a confined space label. The McGill materials describe how a confined space requiring a permit would include one where there is a "potential for a hazardous atmosphere" or "asphyxiation potential." ***(Ex. 26 -- McGill training materials, bates no. MCG 4556-58).***

59. Before the death, Mr. Boykin never saw a warning label on the side of the tankers saying there was a poison gas risk. If McGill had put on a poison gas warning, once again that would have led him to follow up. ***(Ex. 19 -- Boykin Affidavit, item no. 22).*** A variety of poison gas and hydrogen sulfide warning labels and placards are readily available from commercial vendors. ***(Ex. 27 -- examples of warnings).***

60. Lewis Jackson, McGill trucking manager, confirmed that McGill had no seal, gauge/porthole or shutoff valve for its tankers. ***(Ex. 8 -- Jackson 10/20/14 depo. p. 367).***

61. According to Lewis Jackson, McGill only gave drivers written tanker guidelines on February 28, 2012, ten days after Mr. Taylor's death; still later on, McGill first gave written warnings about hydrogen sulfide. ***(Ex. 16 – Jackson 8/11/14 depo. pp. 52-54, 60-62; Ex. 8 -- Jackson 10/20/14 depo. pp. 369-72).***

62. McGill issued written tanker guidelines dated 2/28/12 and tanker guidelines issued by McGill dated 1/13/14. ***(Ex. 28 -- McGill tanker guidelines dated 2/28/12; Ex. 29 -- McGill tanker guidelines dated 1/13/14).***

63. The 2/28/12 guidelines instructed drivers to make sure "loading is taking place in a well-ventilated area," instructed them that when they "open the lid located at the top of the tanker" they are

to "take care as to not place your face directly over the lid opening," and to do the same when closing the lid.

64. The 1/13/14 guidelines warn to "Be aware that organic waste products can produce noxious gases such as hydrogen sulfide and care must be used to avoid inhalation of these vapors."

65. I have been provided no evidence that McGill had similar written guidelines in writing for its drivers before the fatality.

66. A McGill document discussing McGill's safety program admitted of "some areas of weakness in our program." ***(Ex. 30 -- McGill document, bates B.Taylor 3350-51).***

67. The NC OSHA report files reflect that testing for hydrogen sulfide gas levels was done after Mr. Boykin was injured. See OSHA safety and health narrative describing testing after January 19, 2012 incident that found "readings as high as 160 ppm of H2S inside the tanker." ***(Ex. 12 -- OSHA records).***

68. Mr. Boykin described with the McGill tanker drivers always stayed physically with their tankers. He was not aware of any instance when he saw a McGill tanker, where a McGill driver was also not present with it. ***(Ex. 19 -- Boykin Affidavit, item no. 17).*** Accordingly, it is difficult to believe that a McGill tanker could have been tested for gas levels without the McGill driver knowing.

69. When Mr. Taylor died, there is no evidence the McGill driver was trained by McGill to go up on the tanker top with him to assist, supervise, watch over or "spot" him.

70. A transportation safety newsletter possessed by McGill dated August 2010 included the instruction: "If at all possible, the driver should supervise the loading of the vehicle." ***(Ex. 31 -- Aug. 2010 JJ Keller newsletter, bates no. MCG 2993).*** If McGill had trained its driver to carefully supervise the loading of the tanker by Mr. Taylor, this assistance may have saved his life. However, there is no indication that it occurred. Rather, the evidence reflects that the driver that night, Mr. Robinson, waited inside of the cab of the truck while Mr. Taylor was working on top of the McGill tanker. ***(Exs. 4 and 12, OSHA files).***

71. Mr. Boykin described that if McGill had provided a sealed cover or another mechanism to keep vapors from coming up out of the hatch, instead of just a two foot wide open hatch, that would have been safer, since it would have kept gases and vapors from coming up out of the tanker. If McGill had provided a portable gas monitor for people climbing on its tankers, he would have worn it. If McGill had provided a gauge or a porthole on the side of its tankers to show how full the tanker was getting, it would have allowed workers to stay away from the hatch while it loaded. ***(Ex. 19 -- Boykin Affidavit, items no. 18-20).***

72. Mr. Boykin described that he depended on McGill, as the owner of the tanker, to provide adequate safeguards and warnings when he climbed up onto its tankers. ***(Ex. 19 -- Boykin Affidavit, item no. 24).***

73. Mr. Artis stated that the McGill tankers did not have any kind of automatic sensor to warn once the waste was getting close to the top. The McGill tanker had no warnings about how this was a confined space area, or about how the gas that came from inside could be poisonous. ***(Ex. 20 -- Artis Affidavit, item no. 9).***

74. After the Brandon Taylor death, the NC Department of Labor cited and issued monetary penalties against McGill including for exposing workers to an engulfment hazard around sludge, exposing employees on top of a tanker trailer to a fall, exposing employees to hydrogen sulfide from wastewater sludge while unloading tankers from Smithfield, and failing to label tankers as a permit confined space. ***(Ex. 4 -- McGill OSHA citation dated 2012, bates no. B. Taylor 3367, 3369-70).***

75. I have been shown no evidence to date reflecting that McGill managers properly inspected and reviewed the potential dangers of the overhead storage tank loading system into tankers before Mr. Taylor's death. The system loaded sludge from a closed space of an overhead storage tank down into a closed space of a McGill tanker. This meant the system was holding waste in an air-deprived (anaerobic) environment. There is no evidence that McGill sent tankers to pick up similar sludge from a similar overhead tank system anywhere else. It is well-known that slaughterhouse waste and organic waste kept in a closed environment may generate hydrogen sulfide.

76. The ATSDR Fact Sheet on hydrogen sulfide describes as follows:

> "Hydrogen sulfide is a colorless, flammable, highly toxic gas.... It has a characteristic rotten-egg odor that is detectable at concentrations as low as 0.5 ppb.....
>
> Inhalation is the major route of hydrogen sulfide exposure. The gas is rapidly absorbed by the lungs. The odor threshold (0.5 ppb) is much lower than the OSHA ceiling (20 ppm). However, although its strong odor is readily identified, olfactory fatigue occurs at high concentrations and at continuous low concentrations. For this reason, odor is not a reliable indicator of hydrogen sulfide's presence and may not provide adequate warning of hazardous concentrations. Hydrogen sulfide is slightly heavier than air and may accumulate in enclosed, poorly ventilated, and low-lying areas.....
>
> Hydrogen sulfide is produced naturally by decaying organic matter and is released from sewage sludge, liquid manure, sulfur hot springs, and natural gas. It is a by-product of many industrial processes including petroleum refining, tanning, mining, wood-pulp processing, rayon manufacturing, sugar-beet processing, and hot-asphalt paving. Hydrogen sulfide is used to produce elemental sulfur, sulfuric acid, and heavy water for nuclear reactors.
>
> .... [R]epeated or prolonged exposure has been reported to cause low blood pressure, headache, nausea, loss of appetite, weight loss, ataxia, eye-membrane inflammation, and chronic cough."

(Exhibit 50 – ATSDR Fact Sheet).

77. With regard to hydrogen sulfide and confined spaces, a survey of hydrogen sulfide human health effects prepared for the World Health Organization in 2003 summarizes: "There have been numerous case reports of human deaths after single exposures to high concentrations (≥700 mg/m3) of hydrogen sulfide gas (Beauchamp et al., 1984). Most fatal cases associated with hydrogen sulfide exposure have occurred in relatively confined spaces; the victims lost consciousness quickly after inhalation of hydrogen sulfide, sometimes after only one or two breaths (the so-called "slaughterhouse sledgehammer" effect)." ***(Exhibit 51, p. 14, emphasis added).***

78. The McGill Standard Operating Procedures state that "Residuals shall be transported in approved and properly designed vehicles at all times." I have thus far not been shown evidence that McGill took steps to ensure its tankers with their existing equipment were equipped to pick up potentially anaerobic sludge including gauges, overspill prevention and means to prevent toxic air contaminants from escaping into the breathing zone of persons on top of their tankers. ***(Ex. 32 -- McGill Standard Operating Procedures (excerpts)).***

79. The McGill Standard Operating Procedures also state that "All loads of residuals shall be carefully checked by the driver prior to departure to ensure safe transport." I have seen no evidence that McGill ever trained its drivers about potential poisonous gases like hydrogen sulfide or to carefully check the sludge to make sure it did not contain such gas. ***(Ex. 32 -- McGill Standard Operating Procedures (excerpts)).***

80. The McGill Standard Operating Procedures indicate that McGill had a "storage level indicator" on the side of its liquids storage tank that would show how full the tank was. However, there is no evidence McGill ever installed such an indicator on any of its tankers. ***(Ex. 32 -- McGill Standard Operating Procedures (excerpts)).***

81. A McGill document indicates McGill bought a gas monitor after the death of Mr. Taylor and began measuring gas levels outside its tankers. However I have to date not been shown evidence that McGill ever did so before the death. ***(Ex. 33 -- McGill document bates no. MCG26271).***

82. McGill is licensed with the US Department of Transportation with USDOT #996109. ***(Ex. 34 -- McGill US DOT printout).***

83. McGill records reflect prior injury incidents and citations, including as follows:

- 2002, citation for lack of personal protective equipment when unloading products and for inadequate lighting. ***(Ex. 35 – NC DOL documents).*** (As noted, the scene of Mr. Taylor's loading conditions also had inadequate lighting).

- 2002, citation for opening above sludge pit not being guarded. ***(Ex. 35 – NC DOL documents).*** (The opening of the hatch for Mr. Taylor was unprotected and expelled lethal gas).

- 2002, citation for open-sided platform on tanker not being provided with a guardrail system. In a "confirmation of abatement" form dated 7/26/02, McGill represented that it had changed the unloading procedure and issued a notice to drivers and plant employees

that no one was allowed on top of tankers until a harness system was in place. However, there is no evidence that McGill ever did put in such a harness system. ***(Ex. 35 – NC DOL documents).*** Also, after Mr. Taylor's death, McGill represented to the NC DOL that "fall protection devices have been ordered." However, there is no evidence that McGill ever actually did obtain fall protection devices or install them even after Mr. Taylor's death." ***(Ex. 36 -- McGill letter dated August 15, 2012).***

- 2003, citation for exposing employee to hazardous concentrations of airborne ammonia gas; exposing employees to decomposition products of organic materials including but not limited to ammonia ***(Ex. 35).*** (Likewise, McGill allowed a foreseeable user of its tanker equipment, Mr. Taylor, to be exposed to hazardous gas concentrations).

- 2004, citation for allowing employees to operate forklift vehicles without proper training for safe operation, and allowing an employee to be involved in an accident on two occasions without proper training; forklifts lacked proper lights for night work and proper brakes ***(Ex. 35).*** (Here, lighting was inadequate and the tankers had inadequate equipment).

- The OSHA 300 logs reflect numerous incidents and injuries. ***(Ex. 37 -- McGill OSHA 300 Log records).***

- McGill company records reflect prior McGill incidents including during work with sludge. ***(Ex. 38 -- McGill records at bates no. 20358-60, 20454-56, 18420-31).***

84. Hydrogen Sulfide gas (H2S) is the most common odorous gas found in wastewater collection and treatment systems. Its characteristic rotten-egg odor is well known. The gas is corrosive, toxic, and soluble in wastewater. ***(Ex. 39 -- Operation of Municipal Wastewater Treatment Plants, V2: Liquid Processes, 6th edition, p. 13-5).***

85. An OSHA Fact Sheet describes that hydrogen sulfide is a colorless, flammable, extremely hazardous gas with a "rotten egg" smell. Some common names for the gas include sewer gas, stink damp, swamp gas and manure gas. It can be produced by bacterial breakdown of organic materials and human and animal wastes (e.g., sewage). Industrial activities that can produce the gas include among other things, wastewater treatment. ***(Ex. 40 -- OSHA Fact Sheet).***

86. The OSHA Fact Sheet describes that hydrogen sulfide is heavier than air and can collect in enclosed, poorly-ventilated areas. The primary route of exposure is inhalation and the gas is rapidly absorbed by the lungs. People can smell the "rotten egg" odor of hydrogen sulfide at low concentrations in air, but one danger of the gas is that a person can lose the ability to smell the gas even though it is still present. In addition, hydrogen sulfide is a highly flammable gas and gas/air mixtures can be explosive. ***(Ex. 40 -- OSHA Fact Sheet).***

87. The Agency for Toxic Substances and Disease Registry (ATSDR) states that "Hydrogen sulfide is frequently found in industrial settings where it is either used as a reactant or is produced as a by-product of manufacturing or industrial processes. Examples of these processes are .... waste water

treatment facilities, manure and sewage facilities" and "food processing plants." "Facilities where hydrogen sulfide is produced, used, or generated include … food processing plants, manure treatment facilities, … waste water treatment facilities ….." ***(Ex. 41 -- ATSDR Toxicological Profile, pp. 115, 117).***

88. According to the OSHA Web Page, "Hydrogen sulfide (also known as H2S, sewer gas, swamp gas, stink damp, and sour damp) is a colorless gas known for its pungent 'rotten egg' odor at low concentrations. It is extremely flammable and highly toxic…. Because it is heavier than air, hydrogen sulfide can collect in low-lying and enclosed spaces, such as manholes, sewers, and underground telephone vaults. Its presence makes work in confined spaces potentially very dangerous." ***(See OSHA Web Page, https://www.osha.gov/SLTC/hydrogensulfide/).***

89. Hydrogen sulfide is considered a broad spectrum poison, meaning it can poison several different systems in the body. Breathing very high levels of hydrogen sulfide can cause death within just a few breaths. Loss of consciousness can result after fewer than three breaths. Exposure to lower concentrations can result in eye irritation, as sore throat and cough, shortness of breath, and fluid in the lungs. The OSHA permissible exposure limits for hydrogen sulfide are 10 ppm (TWA) and 15 ppm (STEL) ***(Ex. 39 -- Operation of Municipal Wastewater Treatment Plants, V2: Liquid Processes, 6th edition, p. 13-8).*** H2S in the atmosphere known to cause death is 300 ppm. ***(Ex. 42 -- Operation of Wastewater Treatment Plants: A Field Study Training Program).*** A level of H2S gas at or above 100 ppm is Immediately Dangerous to Life and Health (IDLH). Entry into IDLH atmospheres can only be made using: 1) a full facepiece pressure demand self-contained breathing apparatus (SCBA) with a minimum service life of thirty minutes, or 2) a combination full facepiece pressure demand supplied-air respirator with an auxiliary self-contained air supply. ***(Ex. 40 -- OSHA Fact Sheet).***

90. An example of a hydrogen sulfide MSDS sheet describes how it has an IDLH level of 100 ppm, it has a distinct rotten egg smell, the odor cannot be relied on as an adequate warning because the gas can numb the sense of smell, and inhalation of high concentrations can cause unconsciousness and death. ***(Ex. 13 -- H2S MSDS).***

91. On February 18th, 2012 at 2:50 a.m., measurements of the hydrogen sulfide levels inside the hatch were taken and recorded at 200 ppm. ***(Ex. 12 -- OSHA records, bates no. B. Taylor 1134).***

92. McGill safety manager Steve Cockman testified that McGill had requested and received some testing information from Smithfield. However he claimed he had no reason to ask Smithfield for other test results (such as the air testing of the tankers after the Artis or Boykin incidents) before Mr. Taylor's death. ***(Ex. 25 -- Cockman 10/20/14 depo. pp. 317-18).***

93. McGill training materials described that when accidents occur, they should be reported. Accidents could result from "unsafe acts" or "unsafe conditions." The materials described how there should be an "Incident Investigation" and how one source of accidents could be "hazardous chemicals." ***(Ex. 43 -- Paychex "Accidents…. Know What To Do!" document).*** An "Employee Safety Responsibilities Checklist" document described to report "exposures to hazardous substances," "accidents" and "injuries" immediately. ***(Ex. 44 -- "Employee Safety Responsibilities Checklist" document).***

94. Nothing in these safety materials states that someone reporting of injuries and serious incidents should only occur if the incident happens on McGill-owned land. A McGill "Driver's Safety Program" manual dated October 2012, likewise states how the goal is to "Eliminate injuries to our employees and to the general public" – that is to say, the materials recognize the fact that members of the general public and individuals who do not work for McGill may be put in harm's way unless proper safety practices are observed. The "accident reporting procedures" in the manual likewise do not limit accidents that must be reported simply to what happens on McGill premises. ***(Ex. 45 -- McGill "Driver's Safety Program" manual dated October 2012).***

95. McGill trucking manager Mr. Jackson admitted that if for example a Smithfield employee was climbing the McGill tanker ladder and it broke because of rust causing injury, he "might have" considered it an accident to investigate. He also agreed that if a McGill tanker ran over a pedestrian at the Smithfield facility it should be investigated. Yet, he refused to agree that if someone got hurt loading waste standing on top of the McGill tanker it should be investigated. ***(Ex. 8 -- Jackson 10/20/14 depo. pp. 362-63, 330-31).***

96. Anthony Teachey was the McGill plant manager at the McGill Delway compost plant where the waste picked up from Smithfield Clinton was taken. He testified that no one at McGill ever talked to him about hydrogen sulfide. McGill never warned about it. He did not know how workers were supposed to protect themselves against hydrogen sulfide exposure. Mr. Teachey said he did not know anything about the investigation McGill did after Mr. Taylor's death. He recalled air sampling but did not know what it was checking for. No one at McGill ever shared with the workers at the facility what was contained in the sludge that was being hauled from Smithfield. ***(Ex. 18 -- Teachey depo.)***

97. An OSHA document dated July 19, 2012 answers the question of "employer knowledge" with "yes" and discusses how McGill was aware of the potential generation of dangerous gases including methane and hydrogen sulfide. ***(Ex. 4 -- OSHA file materials, bates no. B. Taylor 3403).***

Findings, Opinions, and Criticisms

1. **McGill failed to equip their tanker trailer with gauging systems to determine liquid levels in the tank.**

A gauging system would have allowed the tank fill level to be determined without personnel monitoring it while standing on top of the tank and looking into the open tank hatch. McGill had a responsibility to take the necessary precautions to ensure the safety of its employees and those who were loading their trailers. This includes ensuring that their semi-tanker trailer did not overflow when being filled with wastewater sludge. In order to fill the tankers, the wastewater "operator is required to stay on top of the tanker to monitor the level of sludge inside the tanker using a flashlight to avoid overflowing and spills" ***(Ex. 12 -- OSHA Investigative report, file # 315452789, bates no. B. Taylor 1134).*** This process creates multiple hazards for the worker, including, but not limited to, fall and respiratory hazards. McGill did not take the necessary precautions to minimize these potential hazards.

At the time of Mr. Taylor's accident, Smithfield employees including Mr. Taylor were "eye-balling" liquid sludge levels in the tank by looking inside the tank. The problem with monitoring sludge levels in this manner is that the operator is immediately exposed to hydrogen sulfide gas (H_2S) escaping from the hatch. The Safety and Health Narrative written by CSHO Tim Juneau describes how the wastewater operators were functioning: "To protect themselves, (from the H_2S) operators state they hold their breath and turn their head away during the process because of the smell. Operators are required to stay on top of the tanker to monitor the level of the sludge inside the tanker using a flashlight to avoid overfilling and spills. When the sludge comes within one foot of the top of the tanker, the valve to the overhead storage tank is shut off and the hatch is closed." ***(Ex. 12 -- bates no. B. Taylor 1134).*** The lack of monitoring equipment on the truck meant that workers would be forced to put themselves in harm's way instead of staying at a distance and simply viewing a tank level monitor on the side of the tanker or even in the cab of the truck. This simple device could have been enough to save Mr. Taylor's life by eliminating the need for him to manually check sludge levels with a flashlight thereby exposing himself to toxic gases such as H_2S.

Companies such as Garnet Instruments LTD and Titan Logix Corporation offer many liquid level gauging systems that could have sufficiently alerted the worker to the fill level of the tank For example, Garnet Instruments LTD manufactures "SeeLevel" gauges that measure the level of liquid in the tank and are equipped with an alarm system at three fill levels. This allows the worker to know how full the tanker truck is and can manually shut off the fill valve when the tank is filled to the necessary level. Other firms, such as Vac-Con provide tanks with float gauges that have externally mounted indicator arms that rise with the fluid level inside the tank allowing the operator to determine how full the tank is becoming while standing on the ground and away from the tank. ***(See Ex. 46).***

Titan Logix Corp. also manufactures liquid level gauges, such as the TD80 Dual Rod, that use radar to measure the liquid level then can alert the worker when the tank is at a certain percentage filled (i.e. an alarm sounds when the tank is 90 percent full) ***(Willy Graham consultation, 7.7.2014)***. This allows the worker to be aware of the level and shut off the filling valve before the tank is full and at risk for overflow. A device similar to this one would eliminate the need to check on sludge levels because the limiting factor is already in place. This method would have been a safer way to approach loading waste into tanker trailers because it would have allowed Mr. Taylor to monitor the tank's fill level from a location where he was not exposed to the hydrogen sulfide gas.

In addition to the alarm systems, these gauges have level reading meter displays that could have been placed in a number of places including the truck cab, the side of the tank, or next to the hatch on top of the tank. When using a product such as this one, truck drivers and wastewater operators would no longer have to put themselves in harm's way by needing to physically "eyeball" sludge levels in the tank. This type of monitoring device greatly reduces the risk for exposure to Hydrogen Sulfide because it eliminates the need to be in the immediate vicinity of the harmful gases by enabling employees to stand at a distance and see sludge levels in the tank.

Liquid level sensors are used in a variety of applications for almost any type of tank where the level inside the tank must be known. These technologies have been available to industrial consumers since the 1970's and 80's when the fiber optic liquid level sensor was invented in 1978 for filling large container such as tanker trucks ***(Fiber Optic Liquid Level Sensor, Patent number US 4069838).*** Any one of these could have been used as abatements to the accident in question. Any usage of these

technologies and devices, which have been available for more than 20 years, could have changed the outcome for Mr. Taylor in a more favorable way.

2. **McGill failed to provide workers with and ensure the utilization of personal hydrogen sulfide gas monitoring systems.**

At the time of the incident, products were readily available that could have provided warnings for high levels of hydrogen sulfide. The use of a standard hydrogen sulfide gas detector, such as the MSA Altair single gas detector, could have alerted Brandon Taylor to the presence of high concentrations of hydrogen sulfide gas. This product was easily obtainable. According to Chris Pirollo, MSA safety customer service agent, single and multi-gas monitors have been available to the industry for "at least 15 years" ***(Chris Pirollo Phone Consultation, 6.30.2014).*** Altair is the current product that is made available by MSA.

Prior to the accident that led to the death of Mr. Taylor, multiple injuries occurred due to Hydrogen Sulfide gas exposure. These incidents involved Smithfield workers on top of McGill tanker trailers. ***(Ex. 1 -- Complaint, p. 2)***. Therefore, McGill was, or should have been, aware of these incidents. Additionally, McGill knew of the dangers of hydrogen sulfide because their workers had been exposed to the same hazards when off loading the wastewater sludge at the McGill plant. ***(Ex. 4 -- OSHA Investigative report, file # 316362037, 03.06.2012).*** A unique danger of hydrogen sulfide gas exposure is the high risk of olfactory fatigue, or a deadening of the sense of smell. ***(Ex. 40 -- OSHA Fact Sheet-Hydrogen Sulfide)***. Because of this "unusual property of hydrogen sulfide it is extremely dangerous to rely totally on the sense of smell to warn of the presence of the gas." ***(Ex. 40 -- OSHA Fact Sheet-Hydrogen Sulfide)***. By not providing personal gas monitors, McGill was expecting the workers to rely solely on their sense of smell to protect them from inhaling the harmful gas.

In doing so, McGill failed to protect its own employees as well as others who would be exposed to the hydrogen sulfide hazards. Having the knowledge of such dangers, McGill had a responsibility to ensure that all workers who would be working with their trucks and exposed to hydrogen sulfide were aware of and protected from the hydrogen sulfide gas. This could have been done using personal hydrogen sulfide gas monitoring systems which alert the user when the gas concentrations exceed a pre-determined level.

Craig Coker, the chief engineer at McGill until 2004, wrote an article published in BioCycle Magazine titled "Odor Monitoring and Detection Tools" in which he describes in detail several methods for detecting odorous gasses. "Field tools like olfactometers to interpret odorous conditions, and electronic noses that use gas sensors to mimic odor receptors in the nose" can be used to detect odors in the ambient air environment. "Combined with real-time odor modeling, they have the potential to give a composting facility operator a proactive approach to odor management. They can also be deployed remotely and programmed to have an active alert system based on a set point such as a limiting odor concentration at a receptor's location." ***(Ex. 47 -- Odor Monitoring and Detection Tools, p. 3).*** This alert system could have been programmed to sound when H_2S levels were nearing OSHA acceptable ppm in the air. Operators would be warned of dangerous air content and could have taken appropriate measures to safely distance themselves from the hazard if this type of device was being used. MSA Gas Monitors sells multi and single gas detectors, such as the Altair 4x, at low cost. This product is easy to obtain and use.

3. **McGill failed to properly equip employees loading their tankers with personal alarm systems to alert other personnel when a worker had fallen.**

Personal body monitors can be used for workers working in confined spaces to act as alerts in the event of a fall. These systems are often used as lift monitoring devices that are attached to the back of employees and emit a sound when they are moved too far out of the vertical direction. Another common usage for such devices is among unsupervised physically disabled people who may need assistance in the event of a fall. Companies such as Philips and Life Alert offer these systems that come equipped with auto alert features. This alert system which can be worn as a necklace or a bracelet measures the height, velocity, and impact of the device so that falls can be detected and responded to automatically. ***(Miguel Ortega Phone Consultation)***. The alarm on the device itself would alert others in the vicinity to a fallen worker. Due to the many health effects of Hydrogen Sulfide gas exposure, it is imperative for the victims to be given medical attention as soon as possible. ***(Ex. 40 -- OSHA Fact Sheet-Hydrogen Sulfide)***. Alerts can also be forwarded to Lifeline response centers who would then call the appropriate authorities, either the EMS or the job-site foreman. ***(Miguel Ortega consultation, 06.18.2014).***

According to Philips Lifeline's website, this alert technology has been available since it was patented in 1974. At first, Lifeline systems marketed and sold its services primarily through hospitals and other healthcare facilities. As the company grew and technology advanced, Lifeline systems branched out and began selling its services to individuals as well as professionals. ***(About Philips Lifeline).***

According to Life-Alert's website, this technology has been available to the industry since at least 1987. ***(Life Alert).*** These Life Alert Systems were also available in another version more commonly used in lifting applications where an audible alarm would sound when the device sensed it was too far out of the vertical plane. Not only is this technology "off the shelf" but it is an affordable, simple solution to help monitor the lives of waste water operators dealing with hydrogen sulfide. Had McGill equipped Mr. Taylor with a personal fall alert system, the driver of the truck could have been alerted to Mr. Taylor's slumping over sooner, which would have allowed Mr. Taylor to receive medical help sooner.

4. **Prior to the incident, McGill failed to create Standard Operating Procedures for their drivers and failed to determine whether there was a respiratory hazard present for employees loading/unloading wastewater sludge from semi-tanker trailers.**

Before the incident involving Mr. Taylor, McGill did not provide a Standard Operating Procedure for their drivers. McGill had a duty to train its drivers to help with the loading of the tankers in case any issues arose. ***(Ex. 1 -- Complaint, p2)***. In response to the incident involving Mr. Taylor, "[redacted] provided their procedures created by corporate that required the driver to make sure the loading was taking place in a well ventilated area and to avoid placing their face near the opening of the hatch and discharge valve." **(Ex. 4 -- *OSHA Investigative report, file # 316362037, 03.06.2012)***. The drivers were not trained on how to assist with the loading of the sludge in case any issues arose. If the operator was loading a tanker during the night shift, as in the case of Mr. Taylor's death, the McGill truck driver was the only other person in the area. ***(Ex. 1 -- Complaint, p. 5)***. McGill had a duty to take

all the necessary precautions to ensure the safety of Mr. Taylor, or any other workers who could be exposed to potential hazards. By not sufficiently training the drivers to assist in the loading and monitoring process, McGill failed to properly protect the workers.

Additionally, McGill did not evaluate whether there was a respiratory hazard present to employees who unloaded the wastewater sludge from Smithfield's facility. ***(Ex. 4 -- OSHA Investigative report, file # 316362037, 03.06.2012)***.

OSHA found that McGill was exposing workers to danger and that "where workers were exposed to hydrogen sulfide gas from wastewater sludge," McGill "did not evaluate whether there was a respiratory hazard...." ***(Ex. 4 -- NC DOL Citation, issuance date 8/13/12, bates no. B. Taylor 3369).*** Yet regarding "Employer Knowledge," OSHA found that McGill did know of the hazards and "is aware of the potential generation of dangerous gases such as methane and hydrogen sulfide gas from organic material." ***(Ex. 4 -- OSHA "Worksheet" dated July 19, 2012, bates no. B. Taylor 3403).***

In interviews with McGill workers, the workers revealed that they were exposed to the hydrogen sulfide gas when off-loading the sludge from Smithfield. These workers "would climb on top of the tanker to open the hatch, hold their breath, and step back as gas escaped" ***(Ex. 4 -- OSHA Investigative report, file # 316362037, 03.06.2012)***. McGill had the knowledge of the presence and the dangers of the gas but did not take any precautions to protect the workers from the respiratory hazards.

5. **McGill semi-tanker trailers were not appropriately equipped for workers to safely load wastewater sludge into the trucks by not providing hermetical seals at the junction of the waste discharge pipe and the tank hatch.**

McGill had a responsibility to take the necessary precautions to ensure the safety of its employees and those who were loading their trailers. McGill should have equipped their tanker with a hermetical seal at the hatch so that when the filling pipe was attached to the tanker, no harmful gases would escape. At the time of the incident, the filling process was completed by an eight-inch diameter fill pipe that was placed into the 20-inch diameter hatch on the tanker truck. This allowed for the harmful hydrogen sulfide gas to be displaced out of the tanker and enter the "breathing zone" of the wastewater operator ***(Ex. 4 -- OSHA Investigative report, file # 316362037, 03.06.2012)***. If McGill had equipped the tanker's hatch with a hermetical seal or implemented a bypass system, the worker would avoid this exposure by waiting until the pipe was sealed in the hatch to open the filling valve.

Vetter Emergency Pneumatics manufactures bypass bags that allow the tank to be filled while the hatch is sealed. The BK 20/50 FS inflatable bypass bag would fit into the 20-inch hatch on the tanker. The bag has a 4-inch diameter bypass pipe through which the sludge could flow into the truck ***(See Exhibits 48-49)***. Currently, the discharge pipes on Smithfield's overhead storage tanks are 8-inches in diameter, so the pipe would need to be fitted with a reducing pipe flange. Petersen Products also manufactures similar bypass bags. As with the Vetter bags, the bypass pipe is 4-inches in diameter. The bag inflates to fit inside the 20-inch hatch and seals the harmful gases inside the tank. Both the Vetter and Petersen bags have a hose attached that allows for the gases inside the tank to be controlled and diverted. ***(See Exs. 48-49, Vetter bypass bags).***

6. **McGill failed to explore alternate products and procedures for filling with Smithfield to ensure that the loading of their trucks was being done in the safest manner, such as automatic shut off technology.**

McGill had a responsibility to take the necessary precautions to ensure that their semi-tanker trailer did not overflow when being filled with wastewater sludge. In order to fill the tankers, the wastewater "operator is required to stay on top of the tanker to monitor the level of sludge inside the tanker using a flashlight to avoid overflowing and spills." ***(Ex. 12 -- OSHA Investigative report, file # 315452789, 02.18.2012).*** This process creates multiple hazards for the worker, including, but not limited to, fall and respiratory hazards. McGill did not take the necessary precautions to minimize these potential hazards. McGill and Smithfield could have done so by equipping the tanker and the overhead storage tank with an automatic shut off valve that would allow the operator to monitor the level of sludge from the ground. Automatic shut off technology has been in use since the early 1940s and has been used in many different industries. ***(Barrel Filler Patent, US 2316934 A).*** By using an automatic shut off system, the worker would no longer need to stand on top of the tanker while the sludge was filling the tank, thus reducing the potential for hydrogen sulfide gas exposure.

The automatic shut off valve would work in accordance with an electronic gauging system. The gauge would measure the fill level then once the tank is filled to a predetermined level, the filling system automatically shuts off. ***(Willy Graham consultation, 7.7.2014).*** The system would require Smithfield to alter their filling process by using a power take-off (PTO) pump to fill the tankers rather than gravity. The PTO pump would take its' power from the running engine of the tanker truck. Garnet Instruments LTD manufactures a "SpillStop Overflow Prevention System" that uses the "SeeLevel" gauging system to control the automatic shut off. Once the liquid level reaches the "Engine Shut-Off" point, the engine will automatically turn off, thus removing the power to the pump. This would have prevented Mr. Taylor, or other wastewater operators, from having to be on top of the tanker to manually shut off the filling valve.

7. **McGill failed to require workers that were loading their trucks to wear appropriate PPE including respirators.**

Hydrogen sulfide is a colorless, toxic gas with a characteristic rotten egg odor. It is considered a broad-spectrum poison, meaning it can poison several different systems in the body. Exposure to lower concentrations can cause surface irritation resulting in eye irritation, a sore throat and cough, shortness of breath, and fluid in the lungs. The main exposure route is by inhalation in which breathing high levels of hydrogen sulfide can result loss of consciousness or death. ***(Ex. 39 -- Operation of Municipal Wastewater Treatment Plants, p. 13-8).***

On more than one occasion Smithfield employees complained to management concerning respirators but were never provided with one. "The wastewater operators had voiced their concerns about the gas to management in the past, (redacted) requested a respirator from (redacted) to protect (redacted) told (redacted) to see (redacted) who told (redacted) could not have a respirator without training." ***(Ex. 12 -- OSHA Inspection 315452789, Safety and Health Narrative).*** McGill "did not evaluate whether there was a respiratory hazard to employees who performed" the task of unloading semi-tanker trailers from the Smithfield wastewater facility. ***(Ex. 4 -- OSHA Inspection 36362037, Safety and Health Narrative).***

McGill knew of the potential for dangerous and toxic gases to be generated when the sludge entered into an anaerobic environment which is why they stated that "it was important to keep an aerobic environment for the proper decomposition of the compost material...because the potential exists for methane gas to be generated." ***(Ex. 4 -- OSHA Inspection 36362037, Safety and Health Narrative).***

"The CSHO recommended (redacted) have the gas evaluated by an industrial hygienist to determine employee's exposure and appropriate personal protective equipment to protect employees." ***(Ex. 4 -- OSHA Inspection 36362037, Safety and Health Narrative).***

McGill should have taken the responsibility to protect its own employees and those working on their tanker-trailers by requiring proper PPE when dealing with hydrogen sulfide gas, especially in confined spaces where the risk for exposure is even greater. McGill knew or should have known the dangers presented by hydrogen sulfide gas and they should have required Smithfield Packing Plant to provide respirators to employees working on McGill tankers. Everyone working in industry has a duty to work safely for their own as well as fellow workers protection.

8. **McGill failed to identify a permit required confined space. No evaluation or special attention was given to the permit required confined space which may have resulted in undue harm to Mr. Taylor.**

McGill Environmental Systems was cited by OSHA CSHO in inspection number 316362037 on 08.13.2014 for the following:

Standard	Detail
29 CFR 1910.146(c)(1)	The employer shall evaluate the workplace to determine if any spaces are permit-required confined spaces.
29 CFR 1910.146(c)(2)	If the workplace contains permit spaces, the employer shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces.

According to the OSHA investigative report, "The condition existed where the employer (McGill) had a 20,000 gallon water tank and two semi-tanker trailers with physical and chemical hazards that were not evaluated as permit-required confined spaces. During the walk-around inspection the CSHO observed a 20,000 gallon water tank equipped with an access ladder to the top hatch and semi-tanker trucks with no confined space warning signs. (redacted) stated that they do enter any confined spaces and did not have a program, nor did (redacted) conduct confined spaces awareness training. (redacted) stated they were unaware of any confined spaces on site and had not received training on confined spaces on site." ***(Ex. 4 -- OSHA Inspection 36362037, Safety and Health Narrative).*** This is a clear disregard for what should clearly be labeled as a permit required confined space. A permit required confined space must have one or more of the following characteristics:

1) Contains or has the potential to contain a hazardous atmosphere;
2) Contains a material that has the potential for engulfing an entrant;

3) Has an internal configuration that could trap or asphyxiate an entrant, such as inwardly converging walls or a floor that slopes downward and tapers to a smaller cross-section; and/or
4) Contains any other recognized serious safety and/or health hazard.

Mr. Taylor's work condition most definitely satisfied at least one of these characteristics meaning that the work space should have been considered a permit required confined space. Since that is true, McGill should have been able to "provide at least one attendant outside the permit space into which entry is authorized for the duration of entry operations." ***(29 CFR 1910.146(d)(6)).***

McGill failed in its duty to provide a "spotter" or "attendant" in its duty to comply with permit confined space entry conditions. "Attendant" means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's permit space program. ***(29 CFR 1910.146(d)(6) NOTE).*** By not supplying an attendant, McGill also failed in its duty to properly train and equip an authorized person to watch over and protect entrant personnel. Being that the wastewater operator and the truck driver are often the only two people in the vicinity during the night shift, the truck driver should act as the attendant for the entrant. It was McGill's responsibility to train the truck driver or another employee in order to meet the requirements for a permit required confined space.

In the case of a permit required confined space, the employer is required to inform exposed employees of the potential hazards. The McGill tanker did not have the appropriate warnings to identify the dangers of the contents of the tanker, thus both employees of Smithfield and McGill were not sufficiently informed of the risks they were facing while standing on top of the tanker-trailer. Without the full knowledge of the hazards present, Mr. Taylor was not protected from such hazards. It was the duty of McGill to ensure that all employees were fully aware of the potential hazards. "The CSHO recommended to (redacted) that (redacted) develop and implement a confined space policy, and post danger signs to employees." ***(Ex. 4, OSHA Safety and Health Narrative 36362037).***

The utter disregard for and apparent lack of investigation into job operations by McGill contributed to Mr. Taylor's untimely death. If McGill had properly evaluated the job-site and implemented a sufficient hazard control program, it would have lowered the chance for accidents to occur such as the subject matter. If McGill had put in place appropriate engineering controls, administrative controls, and personal protective equipment, the incident causing Mr. Taylor's death could have been avoided.

9. There is no evidence that implies that Mr. Taylor was being contributorily negligent.

Mr. Taylor acted in accordance with the training and instruction provided to him by Smithfield. There is nothing to suggest that Mr. Taylor contributed in any way to his death. Taylor was performing his duty as a wastewater operator in the manner that was required of him. His death could have been avoided if McGill had taken the appropriate measures to protect both Smithfield and McGill employees working on and around the tanker truck. His coworker Mr. Boykin testifies that he was a safe and competent employee. ***(Ex. 19 – Boykin Affidavit, paragraph 4).***

10. There is no evidence that shows that McGill properly inspected and assessed the safety risks of the overhead tank / tanker pick-up system before beginning to send tankers to Smithfield, prior to the death.

As noted in the fact section above, to date I have been shown no evidence to reflect that McGill managers properly inspected and reviewed the potential dangers of the overhead storage tank loading system into tankers prior to starting to send the tankers to the Clinton facility, or indeed at any time.

A company with McGill's background and environmental expertise should have been very concerned with this system for several reasons.

First, it was an anaerobic system in nature. The system as noted, loaded sludge from a closed unit of an overhead tank down into a closed unit of a McGill tanker. This meant the system was holding waste in an air-deprived (anaerobic) environment. McGill knew or should have known from its compost work and other aspects of its industry and services that storing and holding organic slaughterhouse waste products in anaerobic conditions can generate toxic gas.

Second, it was an unusual system. There is no evidence that McGill sent tankers to pick up similar sludge from a similar overhead tank system anywhere else. Even at Smithfield's Clinton facility, my understanding is the primary and preferred system of waste storage and pick-up was to use a belt press and open top trailers, a system without the dangers of closed-container build-up of poison gas.

Third, it was a system that used a primitive and dangerous loading and measuring process for the sludge. The person draining the waste had to stay under a cramped space below the overhead tank and above the tanker hatch. Because the tanker had no gauges or other equipment to measure how full was the tanker, the worker had to stay near the open hatch. Because it was work done at night, this made it harder to see how full the tanker was getting and also meant less workers were in the vicinity to notice a problem.

Fourth, it was a system that had already led to prior incidents and injuries. Both Tim Artis and Ulysses Boykin were previously injured under similar circumstances, draining from an over tank, to a tanker, at night, with toxic gas escaping. The McGill driver was aware of those incidents. The McGill supervisors and managers were aware or should have been aware as well. Further, McGill knew or should have known that its drivers were encountering the same rotten egg smelling gas when they reached McGill's site with the tanker and had to drain out the sludge. NC OSHA in its reports described that McGill truck drivers were being exposed to the same hazards offloading the wastewater sludge as Smithfield employees were facing when they loaded it. Yet despite all these "alarm bells" McGill kept sending the tankers.

Fifth, McGill's accident reporting rules and training were clearly inadequate to provide protection. Although McGill training/safety documents did not limit accident reporting and investigation merely to incidents occurring on McGill's own land, there is no evidence that McGill ever took any steps whatsoever to investigate the prior injurious incidents that were occurring when workers were on top of its tankers.

Sixth, the evidence indicates that McGill lacked the facilities to properly and thoroughly wash and clean out its tankers between each Clinton site run. McGill knew that even in the 20 minute drive from Clinton back to Delway, gas could store up in the tanker, because the drivers said when they opened the hatch to drain the tanker back at McGill it would make a sound like opening a cola can, that is, releasing pressure of gas. The OSHA file describes that on the way to McGill, the tanker would build up pressure. When they got to McGill the McGill drivers would open the hatch to let gas escape, holding their breath when they did this. The gas smelled like rotten eggs. Thus "during the 20-30 minute transit from Smithfield to McGill with a tanker loaded with sludge, the tanker would build up pressure. Once they arrived at McGill and backed-up to the containment area, they would climb on top of the tanker to open the hatch, hold their breath, and step back as gas escaped (just like opening a bottle of soda). The gas smelled like rotten eggs to the 20th time." ***(Exs. 4 and 12 -- OSHA Files).*** McGill also knew the tankers with the hatch closed were completely air-deprived. Unless the tanker was carefully cleaned after each trip, it could have more toxic gas in it when it went back to Clinton to pick up the next load.

As noted, the McGill Standard Operating Procedures stated that "Residuals shall be transported in approved and properly designed vehicles at all times." I have thus far not been shown evidence that McGill took steps to ensure that its tankers were the approved and proper equipment to use to pick-up the waste from the four overhead storage tanks.

11. McGill's safety and accident procedures and management were reckless and likely contributed to the tragedy.

In light of the facts, testimony and documents reviewed to date, and based on the analysis above:

- McGill did not adequately evaluate and assess the risk of using tankers to drain sludge from overhead storage tanks before commencing the work at Smithfield;
- McGill did not re-assess the risk after the severe injury to Tim Artis or the incident with Ulysses Boykin, both of which McGill employees knew about when they occurred.
- McGill did not adequately assess the risk to its own drivers when they were opening tanker hatches and draining waste back at the McGill facility after pick-up from the Smithfield facility, even though those employees smelled strong rotten egg like gases and tried to hold their heads away from the noxious gases.
- McGill management was aware of the dangers of hydrogen sulfide as a decay product of organic material and sludge, yet did not inform or train even the Delway plant manager about the dangers.
- McGill did not take steps to ensure that its managers and employees shared information to understand and be aware of relevant risks.

- If McGill had refused to pick up waste with tankers from the overhead tanks, or installed better safety equipment on its tankers, or placed warning labels on the tankers or properly trained its drivers, this likely would have saved Mr. Taylor's life.

Note on terminology:

Throughout the report the use of the terms "fume" and "gas" have been at times used interchangeably. Specifically, a fume is the airborne constituent of a metal at standard temperature and pressure, a vapor is the airborne constituent of a substance which is liquid at standard temperature and pressure, and a gas is a gas at standard temperature and pressure *i.e.* 32 F and 14.7 psi at sea level. Where a direct quote is included in the report, the term as used by the person quoted is as the person stated. Otherwise the terminology follows the accepted scientific definitions as noted here.

Rate of Compensation

My billable rate is $300 per hour.

Right to Change or Modify Opinions

The opinions expressed above are based on the materials reviewed and the author's education and experience. If additional information is provided or disclosed, the opinions and findings expressed above may be changed or modified.

[Signature page to follow]

Signed: Albert Weaver III

Albert Weaver III, CSP

Dated: 11.21.2014